

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Serial No. : 10/070,794                                      Examiner : Unknown  
Filed : March 8, 2002  
Title : VARIANTS OF THE GAMMA CHAIN OF AMPK, DNA SEQUENCES  
ENCODING THE SAME, AND USES THEREOF

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I, Judith A. Wasilkus, declare that I personally prepared the paper and the computer-readable copy of the Sequence Listing filed herewith for the above-identified application and that the content of both is the same.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of The United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: October 4, 2002

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## SEQUENCE LISTING

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<120> VARIANTS OF THE GAMMA CHAIN OF AMPK, DNA SEQUENCES ENCODING  
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Lys Pro Leu Val Ser Ile Ser Pro Asn Asp Ser Leu Phe Glu Ala Val	
260 265 270	
tac gcc ctc atc aag aac cgg atc cac cgc ctg ccg gtc ctg gac cct	864
Tyr Ala Leu Ile Lys Asn Arg Ile His Arg Leu Pro Val Leu Asp Pro	
275 280 285	
gtc tcc ggg gct gtg ctc cac atc ctc aca cat aag cgg ctt ctc aag	912
Val Ser Gly Ala Val Leu His Ile Leu Thr His Lys Arg Leu Leu Lys	
290 295 300	
ttc ctg cac atc ttt ggc acc ctg ctg ccc cgg ccc tcc ttc ctc tac	960
Phe Leu His Ile Phe Gly Thr Leu Leu Pro Arg Pro Ser Phe Leu Tyr	
305 310 315 320	
cgc acc atc caa gat ttg ggc atc ggc aca ttc cga gac ttg gcc gtg	1008
Arg Thr Ile Gln Asp Leu Gly Ile Gly Thr Phe Arg Asp Leu Ala Val	
325 330 335	
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Val Leu Glu Thr Ala Pro Ile Leu Thr Ala Leu Asp Ile Phe Val Asp	
340 345 350	
cgg cgt gtg tct gcg ctg cct gtg gtc aac gaa act gga cag gta gtg	1104
Arg Arg Val Ser Ala Leu Pro Val Val Asn Glu Thr Gly Gln Val Val	
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ggc ctc tac tct cgc ttt gat gtg atc cac ctg gct gcc caa caa aca	1152
Gly Leu Tyr Ser Arg Phe Asp Val Ile His Leu Ala Ala Gln Gln Thr	
370 375 380	
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Tyr Asn His Leu Asp Met Asn Val Gly Glu Ala Leu Arg Gln Arg Thr	
385 390 395 400	
ctg tgt ctg gaa ggc gtc ctt tcc tgc cag ccc cac gag acc ttg ggg	1248
Leu Cys Leu Glu Gly Val Leu Ser Cys Gln Pro His Glu Thr Leu Gly	
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420 425 430	

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Ser	Arg	Trp	Thr	Arg	Gln	Glu	Asp	Val	Glu	Glu	Gly	Gly	Pro	Pro	Gly
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Pro	Arg	Glu	Gly	Pro	Gln	Ser	Arg	Pro	Val	Ala	Glu	Ser	Thr	Gly	Gln
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Glu	Ala	Thr	Phe	Pro	Lys	Ala	Thr	Pro	Leu	Ala	Gln	Ala	Ala	Pro	Leu
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Ala	Glu	Val	Asp	Asn	Pro	Pro	Thr	Glu	Arg	Asp	Ile	Leu	Pro	Ser	Asp
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Cys	Ala	Ala	Ser	Ala	Ser	Asp	Ser	Asn	Thr	Asp	His	Leu	Asp	Leu	Gly
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Ile	Glu	Phe	Ser	Ala	Ser	Ala	Ala	Ser	Gly	Asp	Glu	Leu	Gly	Leu	Val
		115					120					125			
Glu	Glu	Lys	Pro	Ala	Pro	Cys	Pro	Ser	Pro	Glu	Val	Leu	Leu	Pro	Arg
		130				135					140				
Leu	Gly	Trp	Asp	Asp	Glu	Leu	Gln	Lys	Pro	Gly	Ala	Gln	Val	Tyr	Met
145					150					155					160

His Phe Met Gln Glu His Thr Cys Tyr Asp Ala Met Ala Thr Ser Ser  
 165 170 175  
 Lys Leu Val Ile Phe Asp Thr Met Leu Glu Ile Lys Lys Ala Phe Phe  
 180 185 190  
 Ala Leu Val Ala Asn Gly Val Arg Ala Ala Pro Leu Trp Asp Ser Lys  
 195 200 205  
 Lys Gln Ser Phe Val Gly Met Leu Thr Ile Thr Asp Phe Ile Leu Val  
 210 215 220  
 Leu His Arg Tyr Tyr Arg Ser Pro Leu Val Gln Ile Tyr Glu Ile Glu  
 225 230 235 240  
 Glu His Lys Ile Glu Thr Trp Arg Glu Ile Tyr Leu Gln Gly Cys Phe  
 245 250 255  
 Lys Pro Leu Val Ser Ile Ser Pro Asn Asp Ser Leu Phe Glu Ala Val  
 260 265 270  
 Tyr Ala Leu Ile Lys Asn Arg Ile His Arg Leu Pro Val Leu Asp Pro  
 275 280 285  
 Val Ser Gly Ala Val Leu His Ile Leu Thr His Lys Arg Leu Leu Lys  
 290 295 300  
 Phe Leu His Ile Phe Gly Thr Leu Leu Pro Arg Pro Ser Phe Leu Tyr  
 305 310 315 320  
 Arg Thr Ile Gln Asp Leu Gly Ile Gly Thr Phe Arg Asp Leu Ala Val  
 325 330 335  
 Val Leu Glu Thr Ala Pro Ile Leu Thr Ala Leu Asp Ile Phe Val Asp  
 340 345 350  
 Arg Arg Val Ser Ala Leu Pro Val Val Asn Glu Thr Gly Gln Val Val  
 355 360 365  
 Gly Leu Tyr Ser Arg Phe Asp Val Ile His Leu Ala Ala Gln Gln Thr  
 370 375 380  
 Tyr Asn His Leu Asp Met Asn Val Gly Glu Ala Leu Arg Gln Arg Thr  
 385 390 395 400  
 Leu Cys Leu Glu Gly Val Leu Ser Cys Gln Pro His Glu Thr Leu Gly  
 405 410 415  
 Glu Val Ile Asp Arg Ile Val Arg Glu Gln Val His Arg Leu Val Leu  
 420 425 430  
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<220>  
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 Val Thr Ser Ser Ser Glu Arg Ile Arg Gly Lys Arg Arg Ala Lys Ala  
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ttg aga tgg aca agg cag aag tcg gtg gag gaa ggg gag cca cca ggt	144
Leu Arg Trp Thr Arg Gln Lys Ser Val Glu Glu Gly Glu Pro Pro Gly	
35 40 45	
cag ggg gaa ggt ccc cgg tcc agg cca act gct gag tcc acc ggg ctg	192
Gln Gly Glu Gly Pro Arg Ser Arg Pro Thr Ala Glu Ser Thr Gly Leu	
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gag gcc aca ttc ccc aag acc aca ccc ttg gct caa gct gat cct gcc	240
Glu Ala Thr Phe Pro Lys Thr Thr Pro Leu Ala Gln Ala Asp Pro Ala	
65 70 75 80	
ggg gtg ggc act cca cca aca ggg tgg gac tgc ctc ccc tct gac tgt	288
Gly Val Gly Thr Pro Pro Thr Gly Trp Asp Cys Leu Pro Ser Asp Cys	
85 90 95	
aca gcc tca gct gca ggc tcc agc aca gat gat gtg gag ctg gcc acg	336
Thr Ala Ser Ala Ala Gly Ser Ser Thr Asp Asp Val Glu Leu Ala Thr	
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gag ttc cca gcc aca gag gcc tgg gag tgt gag cta gaa ggc ctg ctg	384
Glu Phe Pro Ala Thr Glu Ala Trp Glu Cys Glu Leu Glu Gly Leu Leu	
115 120 125	
gaa gag agg cct gcc ctg tgc ctg tcc ccg cag gcc cca ttt ccc aag	432
Glu Glu Arg Pro Ala Leu Cys Leu Ser Pro Gln Ala Pro Phe Pro Lys	
130 135 140	
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Leu Gly Trp Asp Asp Glu Leu Arg Lys Pro Gly Ala Gln Ile Tyr Met	
145 150 155 160	
cgc ttc atg cag gag cac acc tgc tac gat gcc atg gca act agc tcc	528
Arg Phe Met Gln Glu His Thr Cys Tyr Asp Ala Met Ala Thr Ser Ser	
165 170 175	
aag cta gtc atc ttc gac acc atg ctg gag atc aag aag gcc ttc ttt	576
Lys Leu Val Ile Phe Asp Thr Met Leu Glu Ile Lys Lys Ala Phe Phe	
180 185 190	
gct ctg gtg gcc aac ggt gtg cgg gca gcc cct cta tgg gac agc aag	624
Ala Leu Val Ala Asn Gly Val Arg Ala Ala Pro Leu Trp Asp Ser Lys	
195 200 205	
aag cag agc ttt gtg ggg atg ctg acc atc act gac ttc atc ctg gtg	672
Lys Gln Ser Phe Val Gly Met Leu Thr Ile Thr Asp Phe Ile Leu Val	
210 215 220	
ctg cat cgc tac tac agg tcc ccc ctg gtc cag atc tat gag att gaa	720
Leu His Arg Tyr Tyr Arg Ser Pro Leu Val Gln Ile Tyr Glu Ile Glu	
225 230 235 240	
caa cat aag att gag acc tgg agg gag atc tac ctg caa ggc tgc ttc	768
Gln His Lys Ile Glu Thr Trp Arg Glu Ile Tyr Leu Gln Gly Cys Phe	
245 250 255	

aag cct ctg gtc tcc atc tct cct aat gat agc ctg ttt gaa gct gtc	816
Lys Pro Leu Val Ser Ile Ser Pro Asn Asp Ser Leu Phe Glu Ala Val	
260 265 270	
tac acc ctc atc aag aac cgg atc cat cgc ctg cct gtt ctt gac ccg	864
Tyr Thr Leu Ile Lys Asn Arg Ile His Arg Leu Pro Val Leu Asp Pro	
275 280 285	
gtg tca ggc aac gta ctc cac atc ctc aca cac aaa cgc ctg ctc aag	912
Val Ser Gly Asn Val Leu His Ile Leu Thr His Lys Arg Leu Leu Lys	
290 295 300	
ttc ctg cac atc ttt ggt tcc ctg ctg ccc cgg ccc tcc ttc ctc tac	960
Phe Leu His Ile Phe Gly Ser Leu Leu Pro Arg Pro Ser Phe Leu Tyr	
305 310 315 320	
cgc act atc caa gat ttg ggc atc ggc aca ttc cga gac ttg gct gtg	1008
Arg Thr Ile Gln Asp Leu Gly Ile Gly Thr Phe Arg Asp Leu Ala Val	
325 330 335	
gtg ctg gag aca gca ccc atc ctg act gca ctg gac atc ttt gtg gac	1056
Val Leu Glu Thr Ala Pro Ile Leu Thr Ala Leu Asp Ile Phe Val Asp	
340 345 350	
cgg cgt gtg tct gca ctg cct gtg gtc aac gaa tgt ggt cag gtc gtg	1104
Arg Arg Val Ser Ala Leu Pro Val Val Asn Glu Cys Gly Gln Val Val	
355 360 365	
ggc ctc tat tcc cgc ttt gat gtg att cac ctg gct gcc cag caa acc	1152
Gly Leu Tyr Ser Arg Phe Asp Val Ile His Leu Ala Ala Gln Gln Thr	
370 375 380	
tac aac cac ctg gac atg agt gtg gga gaa gcc ctg agg cag agg aca	1200
Tyr Asn His Leu Asp Met Ser Val Gly Glu Ala Leu Arg Gln Arg Thr	
385 390 395 400	
cta tgt ctg gag gga gtc ctt tcc tgc cag ccc cac gag agc ttg ggg	1248
Leu Cys Leu Glu Gly Val Leu Ser Cys Gln Pro His Glu Ser Leu Gly	
405 410 415	
gaa gtg atc gac agg att gct cgg gag cag gta cac agg ctg gtg cta	1296
Glu Val Ile Asp Arg Ile Ala Arg Glu Gln Val His Arg Leu Val Leu	
420 425 430	
gtg gac gag acc cag cat ctc ttg ggc gtg gtc tcc ctc tcc gac atc	1344
Val Asp Glu Thr Gln His Leu Leu Gly Val Val Ser Leu Ser Asp Ile	
435 440 445	
ctt cag gca ctg gtg ctc agc cct gct ggc atc gat gcc ctc ggg gcc	1392
Leu Gln Ala Leu Val Leu Ser Pro Ala Gly Ile Asp Ala Leu Gly Ala	
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 <212> PRT  
 <213> Homo sapiens

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 35 40 45  
 Gln Gly Glu Gly Pro Arg Ser Arg Pro Thr Ala Glu Ser Thr Gly Leu  
 50 55 60  
 Glu Ala Thr Phe Pro Lys Thr Thr Pro Leu Ala Gln Ala Asp Pro Ala  
 65 70 75 80  
 Gly Val Gly Thr Pro Pro Thr Gly Trp Asp Cys Leu Pro Ser Asp Cys  
 85 90 95  
 Thr Ala Ser Ala Ala Gly Ser Ser Thr Asp Asp Val Glu Leu Ala Thr  
 100 105 110  
 Glu Phe Pro Ala Thr Glu Ala Trp Glu Cys Glu Leu Glu Gly Leu Leu  
 115 120 125  
 Glu Glu Arg Pro Ala Leu Cys Leu Ser Pro Gln Ala Pro Phe Pro Lys  
 130 135 140  
 Leu Gly Trp Asp Asp Glu Leu Arg Lys Pro Gly Ala Gln Ile Tyr Met  
 145 150 155 160  
 Arg Phe Met Gln Glu His Thr Cys Tyr Asp Ala Met Ala Thr Ser Ser  
 165 170 175  
 Lys Leu Val Ile Phe Asp Thr Met Leu Glu Ile Lys Lys Ala Phe Phe  
 180 185 190

Ala	Leu	Val	Ala	Asn	Gly	Val	Arg	Ala	Ala	Pro	Leu	Trp	Asp	Ser	Lys
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Lys	Gln	Ser	Phe	Val	Gly	Met	Leu	Thr	Ile	Thr	Asp	Phe	Ile	Leu	Val
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Leu	His	Arg	Tyr	Tyr	Arg	Ser	Pro	Leu	Val	Gln	Ile	Tyr	Glu	Ile	Glu
225					230					235					240
Gln	His	Lys	Ile	Glu	Thr	Trp	Arg	Glu	Ile	Tyr	Leu	Gln	Gly	Cys	Phe
				245					250					255	
Lys	Pro	Leu	Val	Ser	Ile	Ser	Pro	Asn	Asp	Ser	Leu	Phe	Glu	Ala	Val
			260					265					270		
Tyr	Thr	Leu	Ile	Lys	Asn	Arg	Ile	His	Arg	Leu	Pro	Val	Leu	Asp	Pro
	275						280						285		
Val	Ser	Gly	Asn	Val	Leu	His	Ile	Leu	Thr	His	Lys	Arg	Leu	Leu	Lys
	290				295						300				
Phe	Leu	His	Ile	Phe	Gly	Ser	Leu	Leu	Pro	Arg	Pro	Ser	Phe	Leu	Tyr
305					310					315					320
Arg	Thr	Ile	Gln	Asp	Leu	Gly	Ile	Gly	Thr	Phe	Arg	Asp	Leu	Ala	Val
				325					330					335	
Val	Leu	Glu	Thr	Ala	Pro	Ile	Leu	Thr	Ala	Leu	Asp	Ile	Phe	Val	Asp
			340					345					350		
Arg	Arg	Val	Ser	Ala	Leu	Pro	Val	Val	Asn	Glu	Cys	Gly	Gln	Val	Val
		355					360					365			
Gly	Leu	Tyr	Ser	Arg	Phe	Asp	Val	Ile	His	Leu	Ala	Ala	Gln	Gln	Thr
	370					375					380				
Tyr	Asn	His	Leu	Asp	Met	Ser	Val	Gly	Glu	Ala	Leu	Arg	Gln	Arg	Thr
385					390					395					400
Leu	Cys	Leu	Glu	Gly	Val	Leu	Ser	Cys	Gln	Pro	His	Glu	Ser	Leu	Gly
				405					410					415	
Glu	Val	Ile	Asp	Arg	Ile	Ala	Arg	Glu	Gln	Val	His	Arg	Leu	Val	Leu
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Val	Asp	Glu	Thr	Gln	His	Leu	Leu	Gly	Val	Val	Ser	Leu	Ser	Asp	Ile
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 <211> 2022  
 <212> ADN  
 <213> Sus scrofa

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 aaggcctcta gatggacaag gcaggaggat gtagaggaag gggggcctcc gggcccgagg 300  
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 gccacaccct tggcccaagc cgctcccttg gccgaggtgg acaaccccc aacagagcgg 420  
 gacatcctcc cctctgactg tgcagcctca gcctccgact ccaacacaga ccatctggat 480  
 ctgggcatag agttctcagc ctcgggcgcg tcgggggatg agcttgggct ggtggaagag 540  
 aagccagccc cgtgcccata cccagagggt ctgttaccca ggctgggctg ggatgatgag 600  
 ctgcagaagc cggggggccc ggtctacatg cacttcatgc aggagcacac ctgctacgat 660  
 gccatggcga ccagctccaa actggtcatc ttcgacacca tgctggagat caagaaggcc 720  
 ttctttgccc tgggtggccaa cggcgctcga gcggcacctt tgtgggacag caagaagcag 780  
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 tccccctgg tccagatcta cgagattgaa gaacataaga ttgagacctg gagggagatc 900

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<210> 32
<211> 514
<212> PRT
<213> Sus scrofa

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Thr Thr Ala Asp Thr Pro Ser Trp Ser Ser Leu Gly Gly Pro Lys His
    35             40             45

Gln Glu Met Ser Phe Leu Glu Gln Gly Glu Ser Arg Ser Trp Pro Ser
    50             55             60

Arg Ala Val Thr Thr Ser Ser Glu Arg Ser His Gly Asp Gln Gly Asn
    65             70             75             80

Lys Ala Ser Arg Trp Thr Arg Gln Glu Asp Val Glu Glu Gly Gly Pro
    85             90             95

Pro Gly Pro Arg Glu Gly Pro Gln Ser Arg Pro Val Ala Glu Ser Thr
   100             105             110

Gly Gln Glu Ala Thr Phe Pro Lys Ala Thr Pro Leu Ala Gln Ala Ala
   115             120             125

Pro Leu Ala Glu Val Asp Asn Pro Pro Thr Glu Arg Asp Ile Leu Pro
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Ser Asp Cys Ala Ala Ser Ala Ser Asp Ser Asn Thr Asp His Leu Asp
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Leu Gly Ile Glu Phe Ser Ala Ser Ala Ala Ser Gly Asp Glu Leu Gly  
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 180 185 190  
 Pro Arg Leu Gly Trp Asp Asp Glu Leu Gln Lys Pro Gly Ala Gln Val  
 195 200 205  
 Tyr Met His Phe Met Gln Glu His Thr Cys Tyr Asp Ala Met Ala Thr  
 210 215 220  
 Ser Ser Lys Leu Val Ile Phe Asp Thr Met Leu Glu Ile Lys Lys Ala  
 225 230 235 240  
 Phe Phe Ala Leu Val Ala Asn Gly Val Arg Ala Ala Pro Leu Trp Asp  
 245 250 255  
 Ser Lys Lys Gln Ser Phe Val Gly Met Leu Thr Ile Thr Asp Phe Ile  
 260 265 270  
 Leu Val Leu His Arg Tyr Tyr Arg Ser Pro Leu Val Gln Ile Tyr Glu  
 275 280 285  
 Ile Glu Glu His Lys Ile Glu Thr Trp Arg Glu Ile Tyr Leu Gln Gly  
 290 295 300  
 Cys Phe Lys Pro Leu Val Ser Ile Ser Pro Asn Asp Ser Leu Phe Glu  
 305 310 315 320  
 Ala Val Tyr Ala Leu Ile Lys Asn Arg Ile His Arg Leu Pro Val Leu  
 325 330 335  
 Asp Pro Val Ser Gly Ala Val Leu His Ile Leu Thr His Lys Arg Leu  
 340 345 350  
 Leu Lys Phe Leu His Ile Phe Gly Thr Leu Leu Pro Arg Pro Ser Phe  
 355 360 365  
 Leu Tyr Arg Thr Ile Gln Asp Leu Gly Ile Gly Thr Phe Arg Asp Leu  
 370 375 380  
 Ala Val Val Leu Glu Thr Ala Pro Ile Leu Thr Ala Leu Asp Ile Phe  
 385 390 395 400  
 Val Asp Arg Arg Val Ser Ala Leu Pro Val Val Asn Glu Thr Gly Gln  
 405 410 415  
 Val Val Gly Leu Tyr Ser Arg Phe Asp Val Ile His Leu Ala Ala Gln  
 420 425 430  
 Gln Thr Tyr Asn His Leu Asp Met Asn Val Gly Glu Ala Leu Arg Gln  
 435 440 445  
 Arg Thr Leu Cys Leu Glu Gly Val Leu Ser Cys Gln Pro His Glu Thr  
 450 455 460

Leu Gly Glu Val Ile Asp Arg Ile Val Arg Glu Gln Val His Arg Leu  
 465 470 475 480

Val Leu Val Asp Glu Thr Gln His Leu Leu Gly Val Val Ser Leu Ser  
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Gly Ala

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 <212> DNA  
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<220>  
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<210> 36  
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<400> 36  
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<210> 37

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<220>  
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<400> 37  
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<210> 38  
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26

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